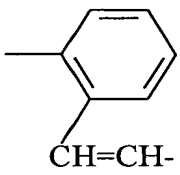
CLAIM SUMMARY DOCUMENT

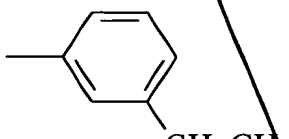
Claim 1 (Previously canceled)

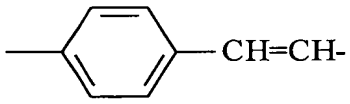
Claim 2 (Previously amended) The method according to claim 38 wherein R_1 and R_2 are a hydrogen atom, a methyl group, or a methoxy group.

Claim 3 (Previously amended) The method according to claim 38 wherein R_3 is a hydrogen atom or a methyl group.

Claim 4 (Previously amended) The method according to claim 38 wherein Z is

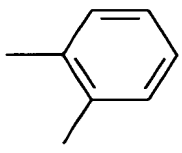


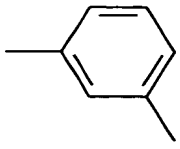


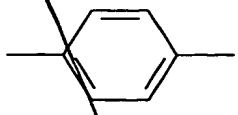


and n is an integer 0.

Claim 5 (Previously amended) The method according to claim 38 wherein Z is







and n is an integer 1, 2, or 3.

Claim 6 (Previously amended) The method according to claim 38 wherein R_4 is a group $-COOR_5$ wherein R_5 is a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbons, an optionally substituted phenyl group, or an optionally substituted aralkyl group having 7 to 11 carbons.

Claim 7 (Previously amended) The method according to claim 38 wherein R_4 is a group $-CONR_6R_7$ wherein R_6 and R_7 are each independently a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbons, an optionally substituted bicyclic unsaturated or partially saturated hydrocarbon ring group having 9 to 11 carbons, an optionally substituted heterocyclic group, an optionally substituted phenyl group, an optionally substituted aralkyl group having 7 to 11 carbons, or a heteroaryl-C_1-C_3-alkyl group, or R_6 and R_7, together with the nitrogen atom to which they are attached, represent a heterocyclic group which may further contain a nitrogen, oxygen, and/or sulfur atom.

Claim 8 (Previously amended) The method according to claim 38 wherein R_4 is a group $-CONR_6R_7$ wherein R_6 and R_7, together with the nitrogen atom to which they are attached, represent a 5- to 10-membered optionally substituted, nitrogen-containing heterocyclic group which may contain, in addition to the carbon and nitrogen atom, 1 to 3

H' Cont

heteroatoms selected from the group consisting of a nitrogen, oxygen and sulfur atom, the carbon atom on said cyclic group being optionally a ketone form or the sulfur atom on said cyclic group being optionally an oxide form.

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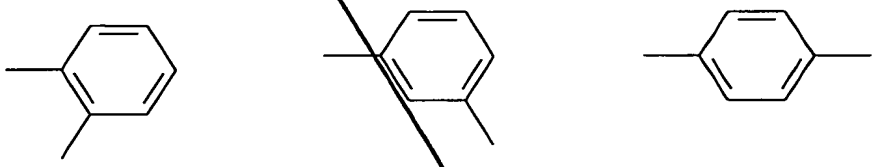
Claim 9 (Previously amended) The method according to claim 38 wherein R_1 and R_2 are a methyl group or a methoxy group; R_3 is a methyl group: R_4 is a carboxyl group which is optionally esterified or amidated; Z is



and n is an integer 1, 2, or 3.

Claim 10 (Currently amended) The method according to claim 38 wherein the benzoquinone derivative suppresses ~~suppressing agent for the~~ gene expression of one or more substances ~~is~~ selected from the group consisting of IL-1, TNF-α, IL-2, IL-6, IL-8, iNOS, granulocyte colony-stimulating factor, inteferon-β, ICAM-1, VCAM-1, ELAM-1, major histocompatibility system class I, major histocompatibility system class II, β2-microglobulin, immunoglobulin light chain, serum amyloid A, angiotensinogen, complement B, complement C4, c-myc, HIV, HTLV-1, SV40, CMV, and adenovirus.

Claims 11-13 (Canceled)

N1 Cont

Claims 14-16 (Previously canceled)

Claim 17 (Previously amended) The method according to claim 40 wherein R_1 and R_2 are a hydrogen atom, a methyl group, or a methoxy group.

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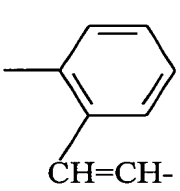
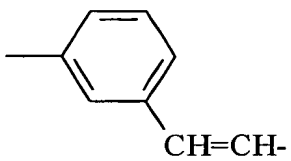
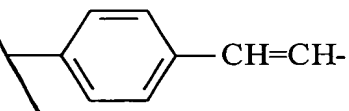
Claim 18 (Previously amended) The method according to claim 40 wherein R_3 is a hydrogen atom or a methyl group.

Claim 19 (Previously amended) The method according to claim 40 wherein Z is

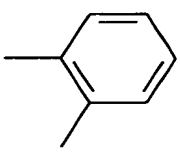


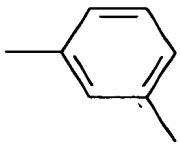


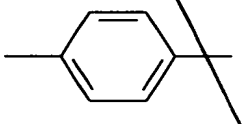


and n is an integer 0.

Claim 20 (Previously amended) The method according to claim 40 wherein Z is







and n is an integer 1, 2, or 3.

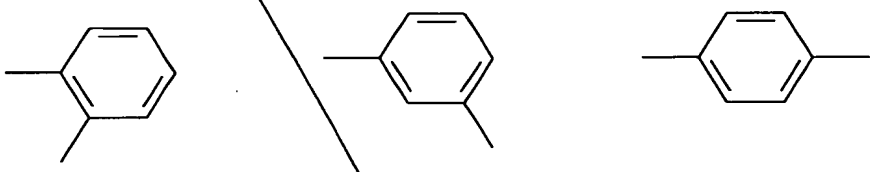
Claim 21 (Previously amended) The method according to claim 40 wherein R_4 is a group $-COOR_5$ wherein R_5 is a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbons, an optionally substituted phenyl group, or an optionally substituted aralkyl group having 7 to 11 carbons.

Claim 22 (Currently amended) The method according to claim 40 wherein R_4 is a group $-CONR_6R_7$ wherein R_6 and R_7 are each independently a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbons, an optionally substituted bicyclic unsaturated or partially saturated hydrocarbon ring group having 9 to 11 carbons, an optionally substituted heterocyclic group, an optionally substituted phenyl group, an optionally substituted aralkyl group having 7 to 11 carbons, or a heteroaryl-C_1-C_3-alkyl group, or R_6 and R_7, together with the nitrogen atom to which they are attached, represent a heterocyclic group which may further contain a nitrogen, oxygen, and/or sulfur atom.

Claim 23 (Previously amended) The method according to claim 40 wherein R_4 is a group $-CONR_6R_7$ wherein R_6 and R_7, together with the nitrogen atom to which they are attached, represent a 5- to 10-membered optionally substituted, nitrogen-containing heterocyclic group which may contain, in addition to the carbon and nitrogen atom, 1 to 3

heteroatoms selected from the group consisting of a nitrogen, oxygen and sulfur atom, the carbon atom on said cyclic group being optionally a ketone form or the sulfur atom on said cyclic group being optionally an oxide form.

24. (Previously amended) The method according to claim 40 wherein R_1 and R_2 are a methyl group or a methoxy group; R_3 is a methyl group: R_4 is a carboxyl group which is optionally esterified or amidated; Z is



and n is an integer 1, 2, or 3.

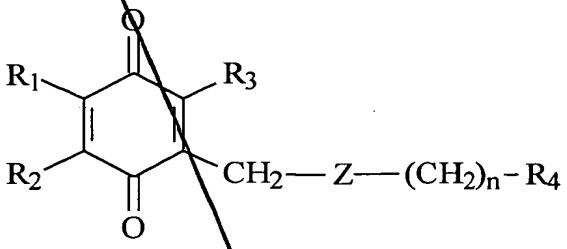
25. (Currently amended) The method according to claim 40 wherein the benzoquinone derivative suppresses ~~suppressing agent for the~~ gene expression of one or more substances ~~is~~ selected from the group consisting of IL-1 TNF-α, IL-2, IL-6, IL-8, iNOS, granulocyte colony-stimulating factor, inteferon-β, ICAM-1, VCAM-1, ELAM-1, plasminogen activator-inhibiting factor I, major histocompatibility system class I, major histocompatibility system class II, β2-microglobulin, immunoglobulin light chain, serum

amyloid A, angiotensinogen, complement B, complement C4, c-myc, HIV, HTLV-1, SV40, CMV, and adenovirus.

Claims 26-28 (Canceled)

Claims 29-37 (Previously canceled)

Claim 38 (Previously amended) A method for inhibiting NF-κB comprising administering to a patient in need of NF-κB inhibition a benzoquinone derivative represented by the following general formula (1):

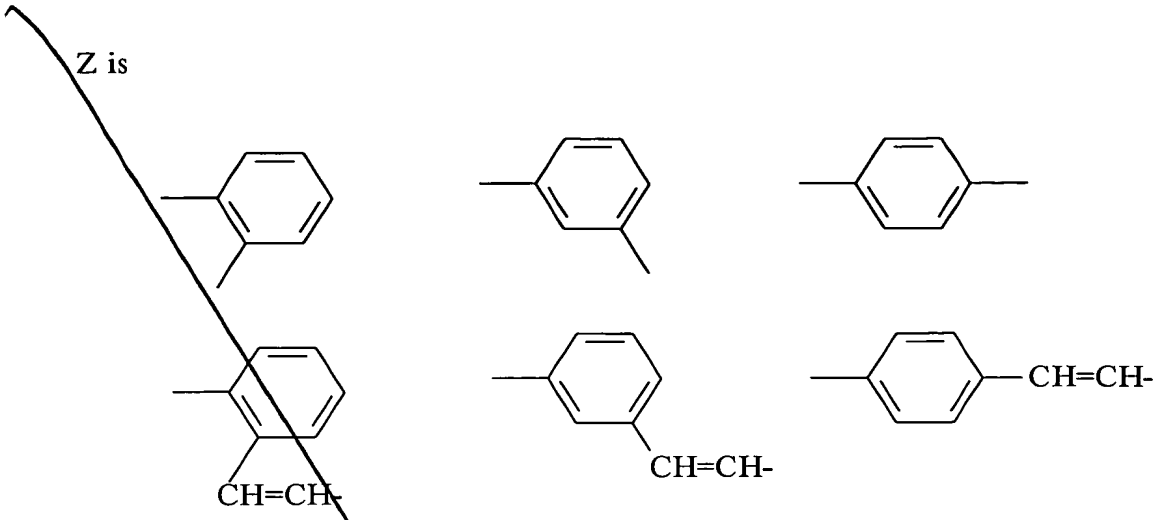


wherein

R_1, R_2 and R_3 are each independently a hydrogen atom, an alkyl group having 1 to 5 carbons, or an alkoxy group having 1 to 5 carbons;

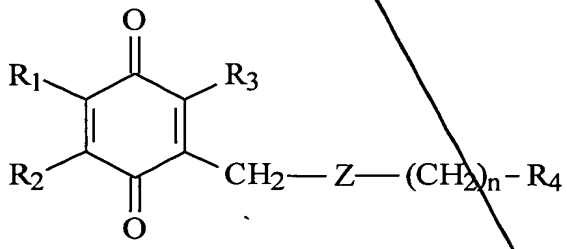
R_4 is a hydrogen atom, a hydroxymethyl group, an alkyl group, or a carboxyl group which is optionally esterified or amidated;

Z is



and, n is an integer from 0 to 6, or its hydroquinone form, or a pharmaceutically acceptable salt thereof.

Claim 39 (Previously amended) A method for preventing or treating diseases caused by the activation of NF-κB comprising administering to a patient a benzoquinone derivative represented by the following general formula (1):

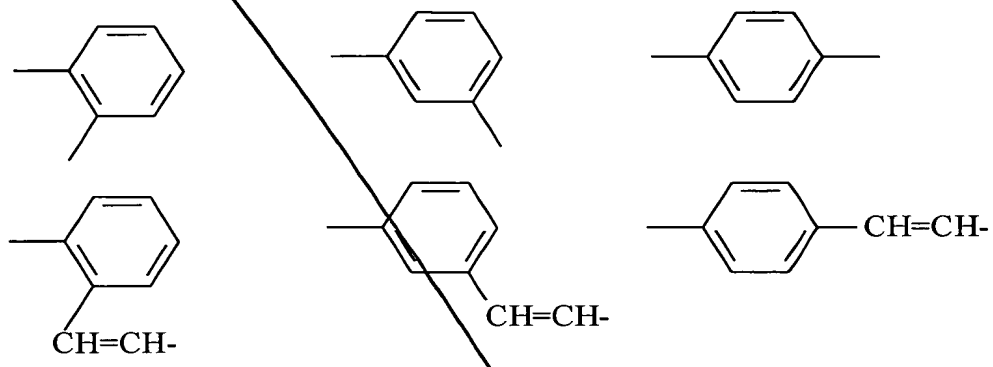


wherein

R_1, R_2, and R_3 are each independently a hydrogen atom, an alkyl group having 1 to 5 carbons, or an alkoxy group having 1 to 5 carbons;

R_4 is a hydrogen atom, a hydroxymethyl group, an alkyl group, or a carboxyl group which is optionally esterified or amidated;

Z is



and, n is an integer from 0 to 6,

or its hydroquinone form, or a pharmaceutically acceptable salt thereof.

Claim 40 (Previously amended) A method for inhibiting TNF-α production comprising administering to a patient in need of TNF-α inhibition a benzoquinone derivative represented by the following general formula (1):

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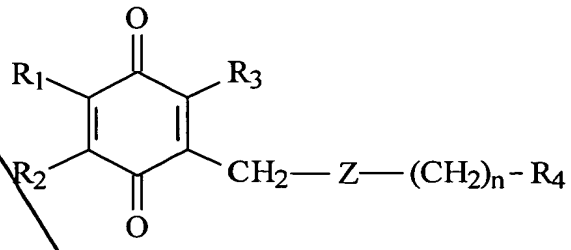

wherein R_1, R_2 and R_3 are each independently a hydrogen atom, an alkyl group having 1 to 5 carbons, or an alkoxy group having 1 to 5 carbons;

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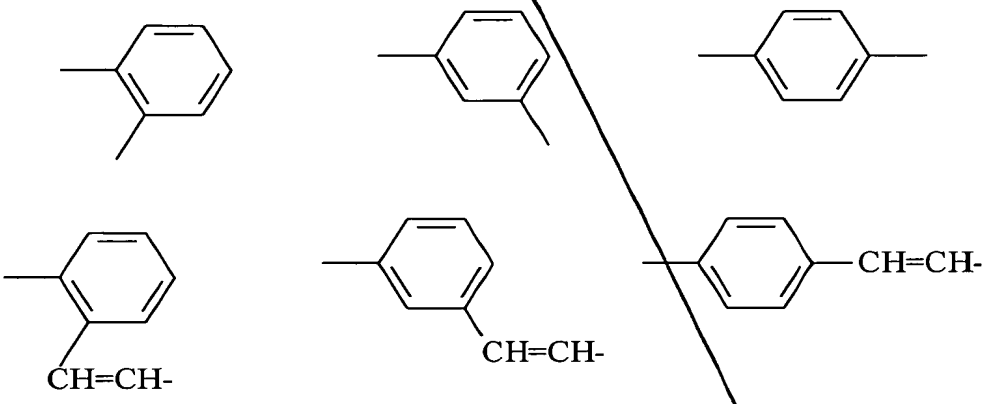
R_4 is a hydrogen atom, a hydroxymethyl group, an alkyl group, or a carboxyl group which is optionally esterified or amidated;

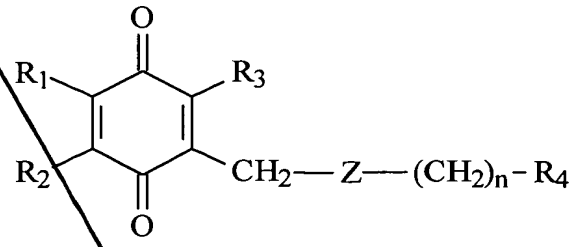
Z is



and, n is an integer from 0 to 6,

or its hydroquinone form, or a pharmaceutically acceptable salt thereof.

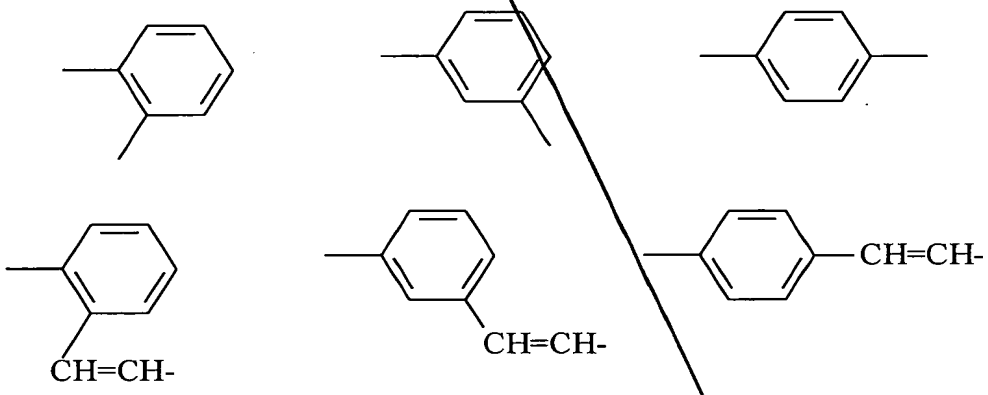
Claim 41 (Previously amended) A method for preventing or treating diseases caused by the excessive production of TNF-α comprising administering to a patient a benzoquinone derivative represented by the following general formula (1):



wherein R_1, R_2 and R_3 are each independently a hydrogen atom, an alkyl group having 1 to 5 carbons, or an alkoxy group having 1 to 5 carbons;

R_4 is a hydrogen atom, a hydroxymethyl group, an alkyl group, or a carboxyl group which is optionally esterified or amidated;

Z is



and, n is an integer from 0 to 6,

or its hydroquinone form, or a pharmaceutically acceptable salt thereof.

N1 Cont

Claims 42-43 (Previously canceled)

Claim 44 (New) A method for treatment of inflammatory diseases comprising administering to a patient in need of such treatment an effective amount of a benzoquinone derivative represented by the following general formula (I):

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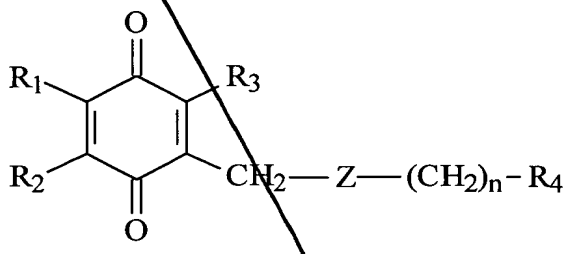
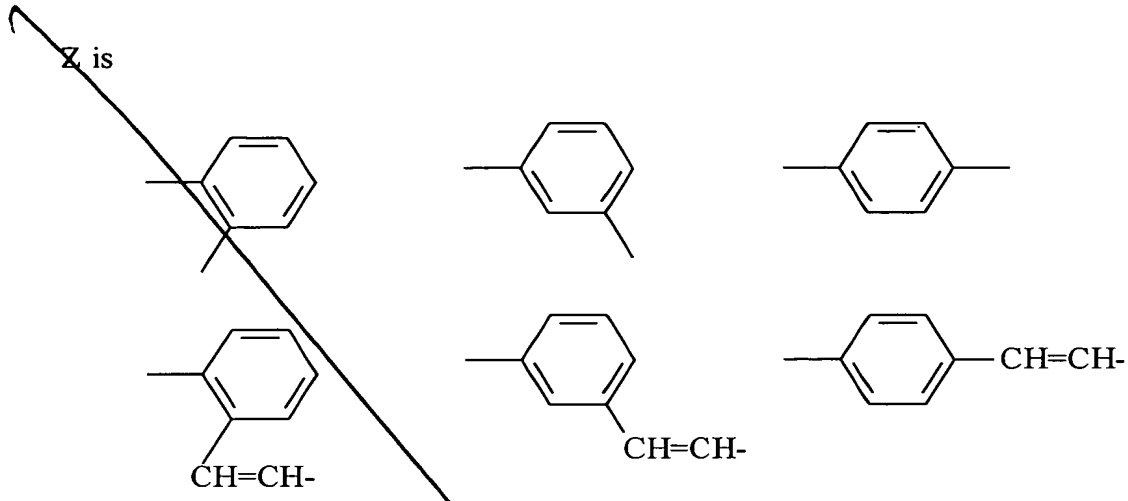


wherein

R_1, R_2 and R_3 are each independently a hydrogen atom, an alkyl group having 1 to 5 carbons, or an alkoxy group having 1 to 5 carbons;

R_4 is a hydrogen atom, a hydroxymethyl group, an alkyl group, or a carboxyl group which is optionally esterified or amidated;

Z is

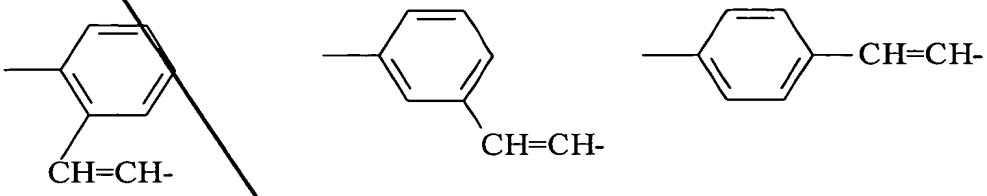


and, n is an integer from 0 to 6, or its hydroquinone form, or a pharmaceutically acceptable salt thereof.

Claim 45 (New) The method according to claim 44 wherein R_1 and R_2 are a hydrogen atom, a methyl group, or a methoxy group.

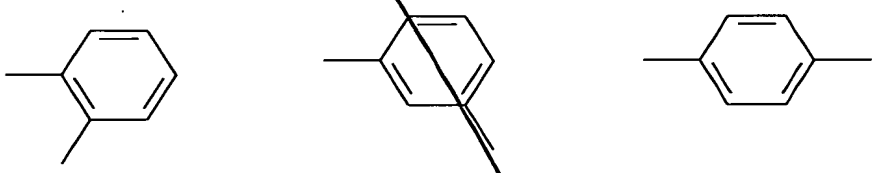
Claim 46 (New) The method according to claim 44 wherein R_3 is a hydrogen atom or a methyl group.

Claim 47 (New) The method according to claim 44 wherein Z is



and n is an integer 0.

Claim 48 (New) The method according to claim 44 wherein Z is



and n is an integer 1, 2, or 3.

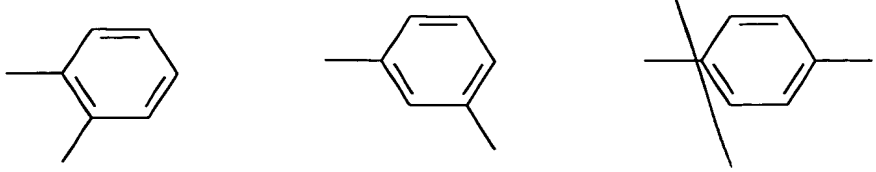
Claim 49 (New) The method according to claim 44 wherein R_4 is a group -$COOR_5$ wherein R_5 is a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbons, an optionally substituted phenyl group, or an optionally substituted aralkyl group having 7 to 11 carbons.

Claim 50 (New) The method according to claim 44 wherein R_4 is a group -$CONR_6R_7$ wherein R_6 and R_7 are each independently a hydrogen atom, an optionally

substituted alkyl group having 1 to 8 carbons, an optionally substituted bicyclic unsaturated or partially saturated hydrocarbon ring group having 9 to 11 carbons, an optionally substituted heterocyclic group, an optionally substituted phenyl group, an optionally substituted aralkyl group having 7 to 11 carbons, or a heteroaryl-C_1-C_3-alkyl group, or R_6 and R_7, together with the nitrogen atom to which they are attached, represent a heterocyclic group which may further contain a nitrogen, oxygen, and/or sulfur atom.

Claim 51 (New) The method according to claim 44 wherein R_4 is a group - $CONR_6R_7$ wherein R_6 and R_7, together with the nitrogen atom to which they are attached, represent a 5- to 10-membered optionally substituted, nitrogen-containing heterocyclic group which may contain, in addition to the carbon and nitrogen atom, 1 to 3 heteroatoms selected from the group consisting of a nitrogen, oxygen and sulfur atom, the carbon atom on said cyclic group being optionally a ketone form or the sulfur atom on said cyclic group being optionally an oxide form.

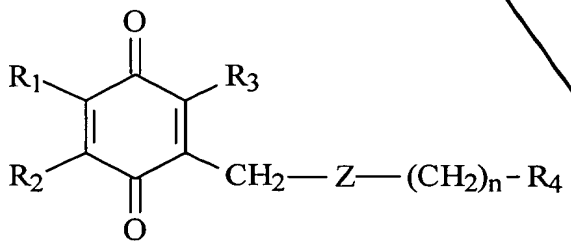
Claim 52 (New) The method according to claim 44 wherein R_1 and R_2 are a methyl group or a methoxy group; R_3 is a methyl group: R_4 is a carboxyl group which is optionally esterified or amidated; Z is



and n is an integer 1, 2, or 3.

Claim 53 (New) The method according to claim 44 wherein the benzoquinone derivative suppresses gene expression of one or more substances is selected from the group consisting of IL-1, TNF-α, IL-2, IL-6, IL-8, iNOS, granulocyte colony-stimulating factor, inteferon-β, ICAM-1, VCAM-1, ELAM-1, major histocompatibility system class I, major histocompatibility system class II, β2-microglobulin, immunoglobulin light chain, serum amyloid A, angiotensinogen, complement B, complement C4, c-myc, HIV, HTLV-1, SV40, CMV, and adenovirus.

Claim 54 (New) A method for treatment of autoimmune diseases comprising administering to a patient in need of such treatment an effective amount of a benzoquinone derivative represented by the following general formula (I):

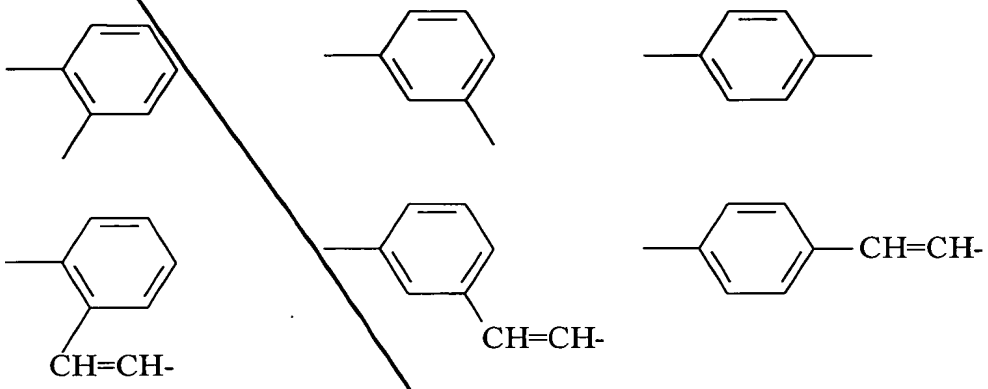


wherein

R_1, R_2 and R_3 are each independently a hydrogen atom, an alkyl group having 1 to 5 carbons, or an alkoxy group having 1 to 5 carbons;

R_4 is a hydrogen atom, a hydroxymethyl group, an alkyl group, or a carboxyl group which is optionally esterified or amidated;

Z is

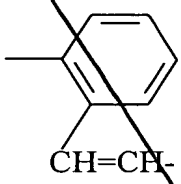


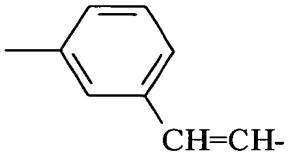
and, n is an integer from 0 to 6, or its hydroquinone form, or a pharmaceutically acceptable salt thereof.

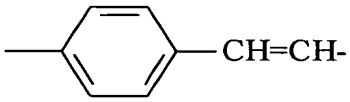
Claim 55 (New) The method according to claim 54 wherein R_1 and R_2 are a hydrogen atom, a methyl group, or a methoxy group.

Claim 56 (New) The method according to claim 54 wherein R_3 is a hydrogen atom or a methyl group.

Claim 57 (New) The method according to claim 54 wherein Z is

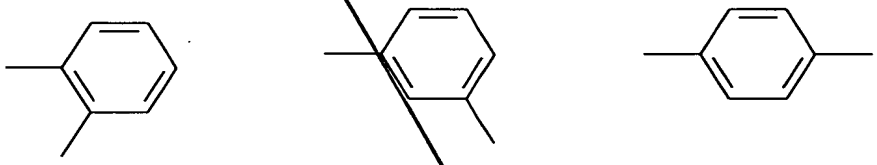






and n is an integer 0.

Claim 58 (New) The method according to claim 54 wherein Z is



and n is an integer 1, 2, or 3.

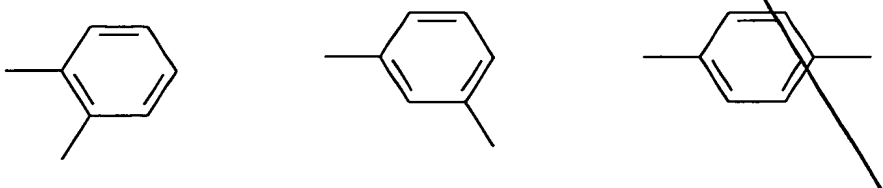
Claim 59 (New) The method according to claim 54 wherein R_4 is a group -$COOR_5$ wherein R_5 is a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbons, an optionally substituted phenyl group, or an optionally substituted aralkyl group having 7 to 11 carbons.

Claim 60 (New) The method according to claim 54 wherein R_4 is a group -$CONR_6R_7$ wherein R_6 and R_7 are each independently a hydrogen atom, an optionally

substituted alkyl group having 1 to 8 carbons, an optionally substituted bicyclic unsaturated or partially saturated hydrocarbon ring group having 9 to 11 carbons, an optionally substituted heterocyclic group, an optionally substituted phenyl group, an optionally substituted aralkyl group having 7 to 11 carbons, or a heteroaryl-C_1-C_3-alkyl group, or R_6 and R_7, together with the nitrogen atom to which they are attached, represent a heterocyclic group which may further contain a nitrogen, oxygen, and/or sulfur atom.

Claim 61 (New) The method according to claim 54 wherein R_4 is a group -$CONR_6R_7$ wherein R_6 and R_7, together with the nitrogen atom to which they are attached, represent a 5- to 10-membered optionally substituted, nitrogen-containing heterocyclic group which may contain, in addition to the carbon and nitrogen atom, 1 to 3 heteroatoms selected from the group consisting of a nitrogen, oxygen and sulfur atom, the carbon atom on said cyclic group being optionally a ketone form or the sulfur atom on said cyclic group being optionally an oxide form.

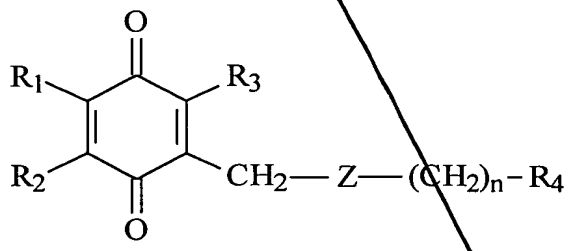
Claim 62 (New) The method according to claim 54 wherein R_1 and R_2 are a methyl group or a methoxy group; R_3 is a methyl group: R_4 is a carboxyl group which is optionally esterified or amidated; Z is



and n is an integer 1, 2, or 3.

Claim 63 (New) The method according to claim 54 wherein the benzoquinone derivative suppresses gene expression of one or more substances is selected from the group consisting of IL-1, TNF-α, IL-2, IL-6, IL-8, iNOS, granulocyte colony-stimulating factor, inteferon-β, ICAM-1, VCAM-1, ELAM-1, major histocompatibility system class I, major histocompatibility system class II, β2-microglobulin, immunoglobulin light chain, serum amyloid A, angiotensinogen, complement B, complement C4, c-myc, HIV, HTLV-1, SV40, CMV, and adenovirus.

Claims 64 (New) A method for treatment of viral diseases comprising administering to a patient in need of such treatment an effective amount of a benzoquinone derivative represented by the following general formula (I):

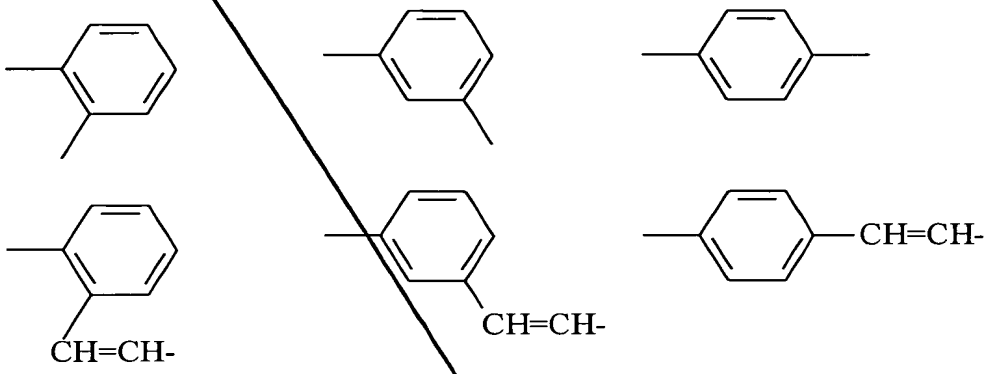


wherein

R_1, R_2 and R_3 are each independently a hydrogen atom, an alkyl group having 1 to 5 carbons, or an alkoxy group having 1 to 5 carbons;

R_4 is a hydrogen atom, a hydroxymethyl group, an alkyl group, or a carboxyl group which is optionally esterified or amidated;

Z is

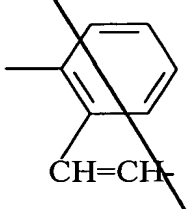


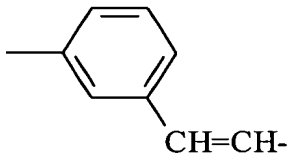
and, n is an integer from 0 to 6, or its hydroquinone form, or a pharmaceutically acceptable salt thereof.

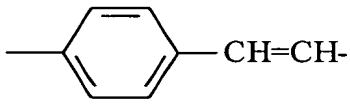
Claim 65 (New) The method according to claim 64 wherein R_1 and R_2 are a hydrogen atom, a methyl group, or a methoxy group.

Claim 66 (New) The method according to claim 64 wherein R_3 is a hydrogen atom or a methyl group.

Claim 67 (New) The method according to claim 64 wherein Z is

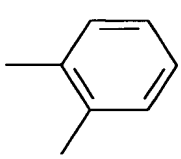


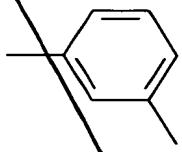


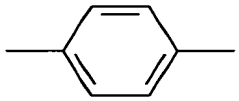


and n is an integer 0.

Claim 68 (New) The method according to claim 64 wherein Z is







and n is an integer 1, 2, or 3.

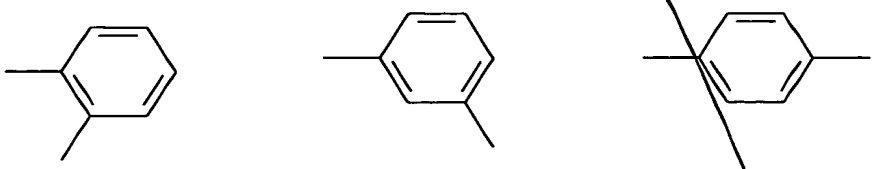
Claim 69 (New) The method according to claim 64 wherein R_4 is a group -$COOR_5$ wherein R_5 is a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbons, an optionally substituted phenyl group, or an optionally substituted aralkyl group having 7 to 11 carbons.

Claim 70 (New) The method according to claim 64 wherein R_4 is a group -$CONR_6R_7$ wherein R_6 and R_7 are each independently a hydrogen atom, an optionally

substituted alkyl group having 1 to 8 carbons, an optionally substituted bicyclic unsaturated or partially saturated hydrocarbon ring group having 9 to 11 carbons, an optionally substituted heterocyclic group, an optionally substituted phenyl group, an optionally substituted aralkyl group having 7 to 11 carbons, or a heteroaryl-C_1-C_3-alkyl group, or R_6 and R_7, together with the nitrogen atom to which they are attached, represent a heterocyclic group which may further contain a nitrogen, oxygen, and/or sulfur atom.

Claim 71 (New) The method according to claim 64 wherein R_4 is a group -$CONR_6R_7$ wherein R_6 and R_7, together with the nitrogen atom to which they are attached, represent a 5- to 10-membered optionally substituted, nitrogen-containing heterocyclic group which may contain, in addition to the carbon and nitrogen atom, 1 to 3 heteroatoms selected from the group consisting of a nitrogen, oxygen and sulfur atom, the carbon atom on said cyclic group being optionally a ketone form or the sulfur atom on said cyclic group being optionally an oxide form.

Claim 72 (New) The method according to claim 64 wherein R_1 and R_2 are a methyl group or a methoxy group; R_3 is a methyl group: R_4 is a carboxyl group which is optionally esterified or amidated; Z is



and n is an integer 1, 2, or 3.

Claim 73 (New) The method according to claim 64 wherein the benzoquinone derivative suppresses gene expression of one or more substances is selected from the group consisting of IL-1, TNF-α, IL-2, IL-6, IL-8, iNOS, granulocyte colony-stimulating factor, inteferon-β, ICAM-1, VCAM-1, ELAM-1, major histocompatibility system class I, major histocompatibility system class II, β2-microglobulin, immunoglobulin light chain, serum amyloid A, angiotensinogen, complement B, complement C4, c-myc, HIV, HTLV-1, SV40, CMV, and adenovirus.